

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner/GAU: Thomas J. Druan, Jr., of AU 3724

Serial Number: 09/708,658

Title: BLADE WITH MICROSCOPIC ...

Applicant: Nick Bromer

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Commissioner for Patents, Washington, D.C. 20231

GROUP 3700

Sir:

A Notice of Appeal was filed on February 3, 2003. Around that date the Appellant spoke with SPE Allan Shoap, who informed the Appellant that the Amendment After Final Rejection of December 18, 2002, would not be entered. An Advisory Action was mailed on February 5, 2003, confirming the gist of SPE Shoap's remarks.

The Advisory Action raises four questions, stating, "The submissions made with the amendment [textbook pages attached to the Amendment AFR] bring into question whether applicant's specification is accurate with respect to "specular." It is also not clear whether the submissions are to be considered as prior art. Also, is applicant trying to now claim something outside the range of the specification and claims? Lastly, it is not clear what is meant by "microscopically straight." The Appellant answers these four questions below.

(1) The word "specular" is used by the Appellant according to its usual meaning, i.e., that a visible image is reflected. The word is defined in the specification at page 9, line 16:

"specular" means that at least some reflected image is visible on a surface, but does not mean that the surface is polished or mirror-like --any surface on which any reflected image is at all visible is specular, and distortion in that image, no matter how much, will not prevent the surface from being "specular";

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According to the graph on page 26 of Bennett and Mattsson, as extended by the Appellant (this graph is discussed below under answer ¶ 2), the Appellant's definition above corresponds to an RMS surface roughness of less than 500 \AA ($0.05 \text{ }\mu\text{m}$) for visible light.

The only place in the Appellant's specification where "specular" is related to surface roughness, rather than to image appearance, is at page 12, line 1, reading, "If the surface is specular it is also smooth to less than a wavelength of light, which is about $0.5 \text{ }\mu\text{m}$." This statement is not inconsistent with the Appellant's definition of "specular," because it states that, *if a surface is specular, then it is* "smooth to less than ... about $0.5 \text{ }\mu\text{m}$." That is, the range extending from zero to $0.5 \text{ }\mu\text{m}$ includes the range of "specular," which turns out to be zero to $0.05 \text{ }\mu\text{m}$ in reality, as shown by the Bennett and Mattsson book.¹

If the Appellant had said "If a surface is specular, then it is smooth to less than $500,000 \text{ }\mu\text{m}$ " that statement would be true, and likewise would not limit "specular." On the other hand, if the Appellant had said "If a surface is specular, then it is smooth to less than $0.5 \text{ }\mu\text{m}$ " that statement might limit "specular"—but the Appellant never made that statement.

The Appellant, who is trained as a physicist, guessed intuitively that if the surface were rougher than a light wavelength it probably would not be specular. That guess is borne out by the detailed analysis of the experts Bennett and Mattsson, and their analysis is backed up by experiment. The Appellant's guess is not at odds with theoretical and experimental fact.

It is noted that the word "about" at page 12, line 1, would prevent any inconsistency even if the bare numbers did not.

¹If the Appellant had stated a converse, i.e., "If the surface is smooth to less than a wavelength of light, which is about $0.5 \text{ }\mu\text{m}$, it is also specular," that might have amounted to an alternative definition of "specular;" but the Appellant did *not* so state.

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(2) The submissions are not prior art, because they are not applicable as prior art in a rejection. 37 C.F.R. § 1.56(a) states that information should be submitted only if it is material to patentability, and 37 C.F.R. § 1.56(b)(1) states that information is material to patentability if "It establishes ... a prima facie case of unpatentability." The Appellant's submissions do not.

The submissions actually have nothing to do with knives *per se* and in particular they do not disclose, or suggest, a blade with a specular surface and a hard layer over that surface.

The Bennett and Mattsson submission relates to the relationship between "specular" and surface roughness, and expresses a theory of physics and a fact of nature, not the work of any prior artisan. If a prior artisan had claimed the Bennett and Mattsson graph in a patent application, it would have been correctly rejected under §101. Mirror surfaces, rough surfaces, and light reflection from those surfaces pre-date humans.

The other submissions show that the surface roughness disclosed by the Williams reference is typical of machined surfaces, not of optical surfaces; or give examples of the smoothness associated with polished surfaces.

As the submissions do not show unpatentability, neither do they refute the Appellant's position. Under 37 C.F.R. § 1.56(b)(2), also, an IDS is not required.

In sum, the Appellant's submissions only *support* his claims, and under the C.F.R. need not be submitted in an IDS for consideration to be proper.

(3) The third question is, is the Appellant trying to now claim something outside the range of the specification and claims? If "now" in this question refers to the Amendment AFR of December 18, the question is moot because that was not entered. If the question refers to the Amendment of July 1, 2002, it is noted that the addition of "whereby the surface is smooth on the order of a light wavelength" was added to claim 1 without objection from the Examiner in the Office Action of October 3, 2002.

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In any event, the answer to the third question is no, because the claims recite "specular" as the key feature and no other features are inconsistent with that term. Claim 1 reads,

1. A blade, comprising:

a substrate including a *specular* surface, *whereby the surface is smooth on the order of a light wavelength*; and

a thin, hard plate deposited on the specular surface, *whereby the hard plate is microscopically flat, on the order of a light wavelength*;

wherein the substrate is beveled toward a cutting edge including the hard plate, *whereby the cutting edge is straight, on the order of a light wavelength*, in a cutting direction.

The Appellant defined "on the order of" in the specification at page 9, line 9, to mean "within a factor of ten (e.g. a centimeter is on the order of 1.1 millimeters and also of 9.9 centimeters...)"

The Appellant also defined "light" as including ultraviolet light (page 10, line 6). Ultraviolet light has a wavelength as short as 0.01 μm .

Thus, the "whereby" clauses, *if* they are taken to be limiting (for the record, that is believed to be incorrect), might imply range of 0.001 μm up to about 5 μm from "on the order of a light wavelength."

The Examiner is invited to note that this hypothetical range of 0.001 μm up to about 5 μm *overlaps* the range that is specular by physics according to Bennett and Mattsson, i.e., zero to 0.05 μm . Claim 1 clearly recites a specular surface; if the following "whereby" were to be taken as limiting, it would be equivalent to "specular *and* with a roughness of about 0.001 to 5 μm ."

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Under that interpretation, claim 1 would recite a roughness ranging from 0.05 μm down to about 0.001 μm : the *intersection* of range 1 and range 2. That is not an inconsistency.

(For the record, the Appellant does not admit that interpretation, because he holds "smooth on the order of a wavelength of light" to include smoothness greater than that of a wavelength of light, and he holds claim 1 to cover roughness of 0.05 μm down to zero. He also holds the whereby clauses to be non-limiting.)

(4) The phrase "microscopically straight" does not appear in the claims. This phrase was attempted entry in the Amendment AFR of December 18, 2002, but that was not entered, and this question is moot. (A related phrase, "microscopically flat," has been in claim 1 since the original filing and there has been no rejection or objection to it.)

In addition to asking the four questions, the Advisory Action also states that the submissions are "not in agreement with applicant's specification." This assertion is respectfully traversed on the grounds above, and on the grounds that there is no explanation or citation for this assertion. Clarification is requested.

The Advisory Action also states that the submissions are not timely. This is respectfully traversed, and reference to the CFR or MPEP is requested if this assertion is to be maintained. The Appellant presented factual evidence relating the main issue of the rejection: The Appellant does not understand how is this untimely. The submissions are not new matter, they raise no new issue, and relate directly to the meaning of the prior art.

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In sum, the Bennett and Mattsson book is not prior art and therefore should be considered; it is highly relevant to the issues; and it overcomes the rejection over Williams.

A personal interview is requested.

Respectfully submitted,

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I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (703) 872-9303) on February 25, 2003.

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Signature *Nick Bromer*

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